



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/798,781

03/12/2004

Joscf Siraky

26032

5619

20529

7590

09/19/2007

NATH & ASSOCIATES

112 South West Street

Alexandria, VA 22314

EXAMINER

SMITH, RICHARD A

ART UNIT

PAPER NUMBER

2859

MAIL DATE

DELIVERY MODE

09/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/798,781

Applicant(s)

SIRAKY, JOSEF

Examiner

R. Alexander Smith

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20040603 & 20040806
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because of the following: In figure 3 the bottom right formula for P has incorporated therein "256(3-2-1)*0" which appears incorrect. Should not the *0 be deleted?

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the bearing arrangement" in claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

Art Unit: 2859

even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to because of the following informalities:

On pages 1 and 2 the discussion of claim 1 although common to all patent applications appears useless in this instant. Correction is optional.

On page 6 in the third paragraph, it appears that "shoulder" should be --shoulder 35--. Furthermore, what are the connecting elements and why do they have the same number 31 as the annular disk?

On page 8 in the second paragraph, it is unclear to the examiner as to what is actually in a pseudo random mode and where is this shown? Furthermore "increment are" should be --increments are--.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: "the bearing arrangement" disclosed in claim 14.

Claim Objections

4. Claims 2-5 and 12-16 are objected to because of the following informalities:

Claim 2: "two successive code disks" do not properly refer to their antecedents.

Claim 4: "the drive gears" do not properly refer to their antecedent of "a drive gear" introduced in claim 3.

Claim 5: "three code disks" do not properly refer to their antecedent of "at least two code disks" introduced in claim 1.

Claim 12:

- a) "two gearwheels" in line 3 does not properly define its relationship and/or antecedent relative to "a differential gear drive" introduced in claim 1.
- b) In line 4 should not "gear (3,4, or 4,5)" be --gear (21 or 22)--?
- c) the joint drive gear... "and extends axially above the two gearwheels" is confusing because "axially above" does not appear to the examiner as being a correct description. Please clarify what this phrase means.

Claim 13: "the gearwheels" lack antecedent basis from claims 8/1.

Claim 14: "the bearing arrangement", "the drive gears" and "the scanning unit" lack antecedent basis from claims 8/1.

Claim 16: "axially close off on either" in line 3 is grammatically incorrect.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by FR 2697081 to Periou.

Periou discloses a device for measuring the position, path, or rotational angle of an object, with a dimensional gauge connected to the object which can be scanned and which assigns measured values to the object's positional range, where these measured values repeat themselves cyclically in the object's successive positional ranges, and with an encoding unit which encodes the number of the completed measured value cycles, where the encoding unit exhibits at least two code disks (8, 9) which are driven by the dimensional gauge by means of reduction gears (18, 19) wherein the code disks exhibit an absolute angular encoding capability (via 11 and 12), the code disks are arranged in succession and are coupled by a differential gear drive (18, 19, 21 and 22) and the number of completed measured value cycles is ascertained from the reciprocal angular positions of the code disks (abstract).

Furthermore, Periou discloses the successive code disks are driven jointly by means of a drive gear and each code disk exhibits a different number of teeth (abstract and page 3 lines 2-34),

wherein the code disks can address 930 measured value cycles can be counted (the example discussed on page 5 lines 1-7),

wherein the code disks are coaxially positioned (as shown), while the code tracks of the angular encoding capability of the code disks are located on annular disks that are 'substantially' concentrically positioned on one plane (at 11 and 12 as shown in figure 2).

the code tracks being illuminated by transmitters (13 and 14) and scanned by respective scanning units (15 and 16),

wherein the code disks exhibit gearwheels which are axially displaced relative to each other (as shown in figure 2),

wherein two gearwheels of the successive code disks are driven by a joint drive gear (as shown in figure 2), whose outer circumference engages with the two gearwheels and extends axially above the two gearwheels (in a broad sense is met by 18, 19 and 21 as illustrated in figure 2),

wherein the gearwheels of all the code disks are circular in design (figure 3), and the code tracks of all the code disks and the optical path of the light transmitter are located in the open interior of the gearwheels (in a broad sense is met by the space between 8 and 9 at 11 and 12 as shown in figure 2),

the code disks, their gearwheels and the annular disks being of a single-piece and transparent (as shown in figure 2 and page 5 lines 8-15).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 8, 9, 11-13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Periou in view of US 4,616,131 to Burkhardt.

Periou teaches all that is claimed as discussed in the above rejections of claim 1 except for

the code tracks are positioned on one plane,
wherein the code tracks of all the code disks are illuminated by a common light transmitter and are scanned by a scanning unit that radially covers the code tracks of all the code disks, and

wherein the code disks along with their gearwheels and the annular disks carrying the code tracks are injection-molded parts of transparent plastic.

Burkhardt discloses an encoder wherein the light source is common, the code tracks are aligned, and the detectors are aligned and mounted as a unit on a plate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device,

Art Unit: 2859

the emitters, and the detectors, taught by Periou, to be a common light transmitter and a scanning unit, as suggested by Periou, in order to reduce labor, inventory and manufacturing costs in building or assembling the device.

With respect to the code tracks being one plane: Periou as stated above shows the tracks as being substantially on a plane. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to place the tracks on a plane, since it has been held that rearranging parts of an invention involves only routine skill in the art, In re Japikse 86 USPQ 70, and since this would make it easier to address the light path from the common light transmitter through the code tracks to the scanning unit.

With respect to the code tracks being of plastic: This limitation is only considered to be the use of "optimum" or "preferred" materials that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide to make the code tracks disclosed by Periou since they are well known types of materials used to make code tracks and since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshen, 125 USPQ 416.

With respect to the code tracks being injection molded: This limitation is a "product by process" limitation and is directed to a step required to form the code track part. Therefore, this step does not provide enough patentable weight since it has been held that 1) the determination of patentability in "product by process" claims is based on the product itself, even though such

Art Unit: 2859

claims are limited and defined by the process, and 2) the product in a "product by process" claim is unpatentable if it is the same as, or obvious from a product of the prior art, even if the prior art product was made by a different process. In re Thorpe et al., 227 USPQ 964 (Fed. Cir. 1985).

9. Claims 2-8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Periou in view of US 4,730,110 to Spaulding.

Periou teaches all that is claimed as discussed in the above rejections of claim 1 except for

wherein the reduction ratio for driving two successive code disks is $1/2^n$,

wherein the drive gears each exhibit 15 teeth and one code disk exhibits 60 teeth, while the other code disk exhibits 64 teeth,

wherein the encoding unit exhibits three code disks (3, 4, 5), so that 4096 measured value cycles can be counted,

wherein the code disks (3, 4, 5) each exhibits an absolutely encoded angular division involving 32 angular increments,

wherein the encoding of the angular division is created by a pseudo-random code with at least 2×5 bit,

the code tracks are positioned on one plane,

wherein the complete encoding unit is designed as an electronic component that is suitable for attachment to a printed circuit board.

Spaulding discloses a shaft encoder employing a plurality of encoders and teaches that successive encoders are in ratio of $1/2^n$, in order to place the data into a natural binary code, that the code wheels can be set to exhibit 4096 measured valve cycles (figure 7), that a division can be broken into 32 subunits represented by 5 bits, i.e., 2×5 (column 8 lines 1-20), wherein a division can be shifted relative to the n th bit of each group (column 2 lines 1-40 and column 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device, taught by Periou, to include a $1/2^n$ reduction ratio, to alter the number of teeth, to add a third code disk, to include 4096 cycles, to have 32 angular increments and a pseudo-random code with at least 2×5 bit, as suggested by Spaulding, in order to place the output in natural binary form, to achieve the necessary resolution, to obtain redundancy and resolve ambiguities and to obtain an accurate reliable, compact and low cost device.

With respect to claim 4 and the specific number of teeth, i.e., 15, 60 and 64: these limitations regarding the number of teeth are only considered to be the "optimum" values of the teeth of the drive gears, the code disk and the other code disk respectively, of the device disclosed by Periou as modified by Spaulding, as stated above, that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on adjusting the rotational ratios to obtain the necessary resolution and accuracy. See In re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claim 8 and the code tracks being one plane: Periou as stated above shows the tracks as being substantially on a plane. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to place the tracks on a

Art Unit: 2859

plane, since it has been held that rearranging parts of an invention involves only routine skill in the art, In re Japikse 86 USPQ 70, and since this would make it easier to address the light path from the common light transmitter through the code tracks to the scanning unit.

With respect to claim 10 wherein the complete encoding unit is designed as an electronic component that is suitable for attachment to a printed circuit board: Periou discloses a device and its workings but does not discuss any type of housing or encasement. Spaulding discloses emitters (a1-h1 etc.), detectors (A1-H1, etc.) and each code wheel (18, etc.) sandwiched between and connected to the immediately adjacent printed component mounting boards (10-11, etc., column 4 lines 58-62). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device and encoding unit, taught by Periou, as an electronic component that is suitable for attachment to a printed circuit board, as suggested by Spaulding, in order to provide an encoder that is compact and able to manufactured at low costs (column 2 lines 41-45).

10. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Periou and Spaulding as applied to claims 2-8 and 10-13 above, and further in view of US 4,654,522 to Gornick et al.

Periou and Spaulding together teach all that is claimed as discussed in the above rejections of claims 2-8 and 10-13. Furthermore, Periou as modified Spaulding discloses the

Art Unit: 2859

device with a base (using the left side, printed circuit board 10 with bearing arrangement 21 of Spaulding when added to figure 2 at transmitters 13 and 14 of Periou) which supports a bearing arrangement for the code disks and wherein a cover (in a broad sense 11 when added to figure 2 at the detectors 15 and 16) includes a scanning unit.

Periou and Spaulding do not teach the cover being a cover plate, and wherein the base plate and the cover plate axially close off on either end a housing part which receives the code disks.

Gornick et al. discloses an encoder and teaches a base (12 with pcb 40) which supports a bearing arrangement (bushing 16) for a code disk and a transmitter (50), and a cover (120 with pcb 90) which supports a scanning unit (100) and discloses that the device is encased. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device, taught by Periou and Spaulding, to have the cover as a cover plate and to include a housing part between the cover and base plates, as suggested by Gornick et al., in order allow easier servicing of the encoder and/or in order to protect the device from external light, dirt, water vapor and other environmental hazards.

Conclusion

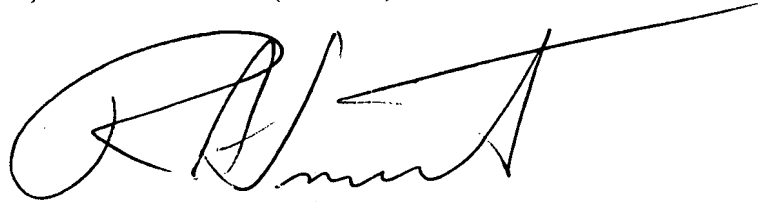
11. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The prior art cited in PTO-892 and not mentioned above disclose related devices.

Art Unit: 2859

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. Alexander Smith whose telephone number is 571-272-2251. The examiner can normally be reached on Monday through Friday from 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'R. Alexander Smith', with a long horizontal stroke extending to the right.

R. Alexander Smith
Primary Examiner
Technology Center 2800

RAS
September 17, 2007